TECHNICAL SUPPORT DOCUMENT
FOR PREVENTION OF SIGNIFICANT DETERIORATION
PSD 97-01, AMENDMENT 3

Weyerhaeuser NR Company and North Pacific Paper Company
Cowlitz County, Washington

Request for Change in Conditions

Prepared by

Air Quality Program
Washington State Department of Ecology
Olympia, Washington

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1.1.1 The Prevention of Significant Deterioration Process

The Prevention of Significant Deterioration (PSD) requirements are established in Title 40, Code of Federal Regulations (CFR), and Part 52.21. Federal rules require PSD review of all new or modified stationary sources in certain specified source categories or sources with emissions above certain potential mass emission thresholds. The objective of the PSD program is to prevent serious adverse environmental impact from emissions into the atmosphere by a new or modified stationary source. The program limits degradation of air quality to that which is not considered "significant" as defined by the federal regulations listed above. PSD rules require that an applicant utilize the most effective air pollution control equipment and procedures after considering environmental, economic, and energy factors. The program sets up a mechanism for evaluating and controlling air emissions from a proposed source to minimize the impacts on air quality, visibility, soils, and vegetation.

The Washington State Department of Ecology (Ecology) has been delegated the authority by the U.S. Environmental Protection Agency (EPA) Region 10, to implement the PSD program in Washington State. The authority to issue this permit comes from Chapter 173-400 Washington Administrative Code (WAC), specifically WAC 173-400-720, and the Washington State Clean Air Act Chapter 70.94 Revised Code of Washington (RCW).

1.2 The Project

1.2.1 The Site

Weyerhaeuser's Longview, Washington mill site hosts two pulping and papermaking operations. The mill is located at 3401 Industrial Way, within the city of Longview, in Cowlitz County, Washington. A chemical pulp mill, utilizing a kraft process, has existed on site since 1948. This mill was largely rebuilt in 1994 and currently produces about 1,400 air dry tons/day of bleached kraft pulp. This pulp is used by one paper machine to manufacture paperboard for liquid packaging end uses. A portion of the pulp production is sold as market pulp. This mill, located at the west end of the 550-acre site, is referred to as Weyerhaeuser Liquid Packaging.

The North Pacific Paper Company (NORPAC) is a Weyerhaeuser/Nippon Paper joint venture company, physically separated from the Liquid Packaging facility, and is located near the central part of the site. NORPAC produces about 1,900 air dry tons/day pulp with a thermo-mechanical pulping process, and about 500 air dry tons/day pulp originating from recycled newsprint. This pulp, along with purchased market pulp, is used by three paper machines to make a range of writing/book papers and newsprint. The NORPAC facility was constructed in three phases in the late 1970s and early 1980s, with the projects denoted as NORPAC I, II, and III.

The Liquid Packaging facility and NORPAC generally share utility infrastructure (i.e., process water supply and wastewater treatment services, process steam supply, wood chip storage/sorting/conveyance, electricity and natural gas, etc.).

1.2.2 The NORPAC Manufacturing Process

There are three sources of fiber for the NORPAC paper machines: the pulp produced in the thermo-mechanical pulping (TMP) process, bleached kraft market pulp, and recycled fiber from old newsprint. The TMP process uses wood chips as the feedstock. The chips are washed, pneumatically fed to four chip cyclones, conveyed to nine chip surge bins, fed through one of nine rotary valves, preheated in the steaming tubes, each of which is paired with a refiner. In the primary and secondary refiners, the chips are ground to a pulp by counter-rotating disks. Heat recovery loops have been installed at NORPAC to recover the heat generated in the refining process. The exhaust from these heat recovery systems is ultimately directed to the No. 2 spray condenser. The pulp is bleached to the desired brightness between the primary and secondary refiners. There are two bleaching towers, each with a vent exhaust. The rest of the TMP process prepares the pulp for the paper machines through a series of screens, dilutions, and pulp storage steps. TMP pulp is blended with purchased kraft and recycled deinked pulp.

Paper Machines No. 1 and 2 are very similar, with each having similar exhausts to the atmosphere. The pulp sheet is sent through the press section of the paper machine where the excess water is squeezed out of the newly formed sheet while a vacuum is applied across the sheet to suction water out of the sheet. The emissions from this process are exhausted through the Vacuum Trench exhaust. After the press section, the sheet is sent through the natural gas-fired air cap dryers, where hot air is blown against the top of the sheet to continue the drying process. Air cap dryer #1 has three emission locations; air cap dryer #2 has a single combined exhaust vent. After the air cap, the sheet is directed through multiple sections of a steam-heated dryer. Each machine has several dryer sections (six on PM#1, seven on PM#2), each with an exhaust, and one BelVent roll, with its own exhaust.

1.2.3 NORPAC PSD Permitting History

In 1996 NORPAC submitted a PSD application for significant net emission increases of volatile organic compounds (VOC) and carbon monoxide (CO). Ecology's review of the application ultimately resulted in the issuance of PSD-97-01. In the 1996 application, NORPAC estimated that the NORPAC I and II facilities would produce 540,000 air-dried metric tons (ADMT) of newsprint each year. High brightness paper grades totaling to 25,000 ADMT of production were expected to be produced as a portion of the total production. Subsequently, permitted projects (TMP Screen Improvements Project and PM#2 Rebuild Project) improved process reliability and resulted in increased TMP pulp and paper production.

The NORPAC III construction project added the recycled newsprint de-inking plant and the #3 paper machine. A PSD applicability analysis for this project phase revealed no significant net increase in emissions and, therefore, no PSD permitting obligation.

Amendments 1 and 2 of PSD 97-01 were issued in April and May 2004. The amendments recognized increased pulp and paper production rates, delineated several pulp grades and corresponding VOC and CO emission factors (for "High Bright" paper), and recognized annual potential production rates of 542,117 BDMT/yr of TMP pulp and 623,685 ADMT/yr of paper, both to match expected future market demand for varying paper basis weights and brightness specifications. An emission netting analysis based on intra-source emission reduction credits demonstrated that no "net significant increase in emissions" occurred. This project was determined by Ecology not to be a "major modification" per 40 CFR Part 52.21.

1.2.4 The Current Project

NORPAC has made various process improvements and completed several energy conservation projects since PSD 97-01, Amendment 2 was issued in 2004. The physical changes were completed in 2009, which resulted in efficient heat and energy recovery, and significant emissions reductions. NORPAC made the following physical changes and process improvements to NORPAC I and II:

a. Process steam from the fiber separators was collected and rerouted to the TMP reboiler system and utilized as a heat source to produce additional steam for use in the paper machine operations.

b. A heat recovery system that collects exhaust gases from various TMP process vents was implemented. The collected gases are directed to a condenser and converted to hot water for subsequent use in the mill.

c. The pressurized cyclone was replaced with a fiber separator for efficient steam/fiber separation.

d. VOC emissions reduction was accomplished by collecting and rerouting the startup scrubber vent gas and the peroxide tower 1 & 2 vent gases into the TMP atmospheric heat recovery system. The startup scrubber was previously vented directly to the atmosphere. An ability was maintained to vent this system to the atmosphere should over-pressurization of the heat recovery system occur.

e. CO formation decreased when the bleaching agent (hydrogen peroxide and magnesium hydroxide) addition was shifted to the primary refineries from the peroxide towers. This change in the addition point also led to a pulp brightness improvement.

Table 1 summarizes the process areas source tested in 2008 and 2009, the predominant operating scenarios, former emission factors, the new emission factors reflecting current mill configuration and operation, and the source test results. The objective of the 2008-2009 source testing was to verify the reasonableness of emission factors developed in earlier source testing.

This proposed Amendment 3 to PSD 97-01 is a Change in Conditions request to recognize the lowered VOC and CO emissions resulting from these energy conservation and fiber recovery projects. The emissions reductions were documented through required emission source testing in 2008 and 2009. Emission limits for VOC and CO are reduced by over 60% each from limits in the 2004 amended permit (calculated based on tested emission factors times maximum production capacity). Increased pulp and paper manufacturing production rates are incorporated.

Due to market influences, NORPAC plans to shift paper production from newsprint to higher basis weight writing/book grades. Amendment 3 proposes to recognize NORPAC I and II pulp production for the highest production grades of 748,980 bone dry metric tons/year and 762,850 air dry metric tons/year of paper production. This maximum production capacity is based on a calculated daily maximum pulp production rate, 365 day/year operation, and a 95% paper machine operating rate.

Table 1. UPDATED VOC EMISSION FACTORS BASED ON 2008 AND 2009 SOURCE TESTING

Source	Pollutant	Operating Scenario	Current PSD Permit Emission Factor[a]	Updated 2008 & 2009 Emission Factor	Units
TMP Process Vents[b]	VOC	Reboiler Online, Normal Brightness	1.498	0.271	lb C/BDMT
		Reboiler Online, High Brightness	1.498	0.340	lb C/BDMT
		Reboiler Down Normal Brightness	1.739	0.319	lb C/BDMT
		Reboiler Down High Brightness	1.739	0.308	lb C/BDMT
TMP Relief Valves B&C, 100% open	VOC	Valve B or C Venting, Normal Brightness	-	0.049[c]	lb C/BDMT *(per valve)*
		Valve B or C Venting, High Brightness	-	0.062[c]	lb C/BDMT *(per valve)*
TMP Total, Valves B&C 100% Open (worst case)	VOC	Reboiler Online, Normal Brightness	1.498	0.368	lb C/BDMT
		Reboiler Online,	1.498	0.463	lb C/BDMT

Source	Pollutant	Operating Scenario	Current PSD Permit Emission Factor[a]	Updated 2008 & 2009 Emission Factor	Units
		High Brightness			
		Reboiler Down Normal Brightness	1.739	0.416	lb C/BDMT
		Reboiler Down High Brightness	1.739	0.432	lb C/BDMT
PM 1	VOC	Normal Brightness	1.661	0.444	lb C/ADMT
		High Brightness	1.661	0.457	lb C/ADMT
PM 2	VOC	Normal Brightness	1.661	0.444	lb C/ADMT
		High Brightness	1.661	0.457	lb C/ADMT
PM 1 & 2	CO	Normal Brightness	3.45	15.2[d]	lb/MMCF
		High Brightness	3.45	15.2[d]	lb/MMCF
TMP 1 & 2	CO	Normal Brightness	3.284	0.561	lb/BDMT
		High Brightness	3.284	0.805	lb/BDMT

[a] The current PSD permitted emission factors are based upon the 2002 source testing.
[b] TMP Process Vents refers to those emission points with continuously open discharge points; that is, all emission points except for the intermittently open Pressure Relief Vent Valves B & C.
[c] The VOC emissions factor for "TMP Relief Valves B & C, 100% Open" describes the incremental emissions from Valves B and/or Valve C, when either valve is open. These emissions must be added to the "TMP Process Vents" emission to obtain Total TMP emissions.
[d] The paper machine CO emissions factor is influenced by natural gas combustion in air cap dryers, not by paper grade. For conservatism, the higher of the two emission factors derived from 2008 testing is used here.

1.3 New Source Performance Standards and National Emission Standards for Hazardous Air Pollutants

New Source Performance Standards (NSPS) apply to certain types of equipment that are newly constructed, modified, or reconstructed after a given applicability date. The National Emission Standards for Hazardous Air Pollutants (NESHAP) apply to categories of equipment with hazardous air pollutant emissions. The applicability of the following NSPS and NESHAPs are presented below:

1.3.1 New Source Performance Standards

The NORPAC project does not contain processes or equipment that is subject to NSPS regulations. Therefore, NSPS regulations **are not** applicable.

1.3.2 National Emission Standards for Hazardous Air Pollutants

The NORPAC project does not contain processes or equipment covered by a NESHAP. Therefore, NESHAP regulations **are not** applicable.

1.4 The PSD Permit "Change in Conditions" Request

Weyerhaeuser NORPAC submitted a request for Change in Conditions of PSD 97-01, Amendment 2, on April 7, 2010. Ecology met with Weyerhaeuser NORPAC on May 3, 2010, and requested additional information. The requested information was submitted on May 19, 2010, and the application was considered complete on June 7, 2010.

NORPAC requested, and Ecology proposes to approve, the following changes to NORPAC's existing PSD Permit No. PSD 97-01, Amendment 2:

a. Update volatile organic compound (VOC) and carbon monoxide (CO) emission factors to incorporate the results of 2008 and 2009 source testing at the NORPAC facility. This round of source testing showed that implementation of various energy conservation projects yielded significant emission reductions.

b. Revise VOC and CO emission limits using updated emission factors and revised production projections for thermo-mechanical pulping and paper production. Emission limits for VOC and CO are reduced by more than 60% each from limits in the 2004 amended permit. This equates to a reduction in allowable emissions of about 600 tons per year for VOC and 575 tons per year for CO.

c. Revise requirements for source testing for purposes of verifying the reasonableness of emission factors. This revision allows for a reduced testing frequency from once every three years to once every five years if two consecutive source tests indicate emission factor changes within +/- 20% of the 2008-2009 emission rates.

d. Update estimated maximum production rates. NORPAC I and II production rates for highest production grades will total up to 748,980 BDMT/year of pulp and 762,850 ADMT/year of paper. This maximum production capacity is based on a calculated daily maximum pulp production rate, 365 day/year operation, and a 95% paper machine operating rate.

1.5 PSD Applicability

The kraft pulping and papermaking mill and the NORPAC mill together comprise a major stationary source under the Clean Air Act Title 40, Code of the Federal Regulations, Part 52.21 because:

- The kraft pulp mill is one of the 28 listed industries that becomes a "major source" when emitting more than 100 tons per year of any regulated pollutant.

- Existing emissions of VOC, CO, and other criteria pollutants from the stationary source are each greater than t100 tons per year.

- The site of the proposed project is in an area that has been designated as in attainment with national and state ambient air quality standards for all pollutants.

NORPAC's Change in Conditions request is subject to PSD review as required by WAC 173-400-750. In accordance with WAC 173-400-750(3), the requested changes are subject to public involvement.

The physical and process changes made to NORPAC I and II since PSD 97-01, Amendment 2 was issued, do not qualify as a "major modification" because the changes did not result in a significant net emissions increase of any regulated PSD pollutant.

1.6 Emissions and Emission Control

Required source testing of VOC and CO emission units in 2008 and 2009 revealed significant reductions in actual emission rates. The observed emission reductions were a result of a series of process improvements and energy conservation projects completed by NORPAC since 2004. When the new emission factors are used with the estimated maximum facility production rates, the resulting VOC and CO emission limits will be reduced by about 60% from the emission limits in the current PSD permit. As such, the NORPAC I and II physical equipment changes since Amendment 2 do not qualify as a "major modification" because emissions of VOCs and CO have decreased. Additionally, significant emission increases are not expected for other regulated PSD pollutants.

1.6.1 Federally Enforceable Limitations

NORPAC has proposed federally enforceable emission limits derived from use of the emission factors from the 2008 and 2009 source test program, and the maximum production capacity of NORPAC I and II. This maximum production capacity is based on a calculated daily maximum pulp production rate, 365 day/year operation, and a 95% paper machine operating rate.

An obligation will remain for emission unit source testing for VOC and CO on a three-year frequency for the purposes of verifying the reasonableness of emission factors. Provision is

being made to eliminate the need to source test emission units with proven insignificant mass emissions, if requested by NORPAC and approved by Ecology. If the source testing results indicate emission factor changes more than +/- 20% from the 2008-2009 emission rates, either Ecology or Weyerhaeuser NORPAC can initiate an action to adjust the emission factors in the PSD permit.

Proposed emissions from this requested Change in Conditions are shown in Tables 2 and 3 below:

Table 2. NORPAC I & II VOC EMISSION FACTORS
Daily and Annual Emission Rates

Source	Estimated Maximum Production Rate (daily)	Estimated Maximum Production Rate (yearly)	VOC Emission Factor	VOC Emissions (lb/day)	VOC Emissions (tons/year)
TMP #1 Process Vents Reboiler Online	Pulp production, 1080 (BDMT/day)	Pulp production, 374,490 (BDMT/year)	0.340 (lb C/BDMT)	367	63.7
TMP #1 Process Vents Reboiler Down	Pulp production, 0 (BDMT/day)	Pulp production, 0 (BDMT/year)	0.319 (lb C/BDMT)	0	0.0
TMP #2 Process Vents Reboiler Online	Pulp production, 1080 (BDMT/day)	Pulp production, 374,490 (BDMT/year)	0.340 (lb C/BDMT)	367	63.7
TMP #2 Process Vents Reboiler Down	Pulp production, 0 (BDMT/day)	Pulp production, 0 (BDMT/year)	0.319 (lb C/BDMT)	0	0.0
TMP Pressure Relief Valves B&C Open	Pulp production, 1080 (BDMT/day)	Pulp production, 149,796 (BDMT/year)	0.124 (lb C/BDMT)	268	9.3
PM 1	Gross Product, 1,000 (ADMT/day)	Gross Product, 346,750 (ADMT/year)	0.457 (lb C/ADMT)	457	79.2
PM 2	Gross Product, 1,200 (ADMT/day)	Gross Product, 416,100 (ADMT/year)	0.457 (lb C/ADMT)	548	95.1
Total VOC Emissions				**2,007**	**311.0**

Table 3. NORPAC I & II CO EMISSION FACTORS AND ANNUAL EMISSION RATES

Source	Estimated Maximum Production Rate (yearly)	CO Emission Factor	CO Emissions (tons/year)
TMP 1	Pulp production 374,490 (BDMT/year)	0.805 (lb/BDMT)	150.7
TMP 2	Pulp production 374,490 (BDMT/year)	0.805 (lb/BDMT)	150.7
PM 1	432 (MMcuFt/year)	15.2 (lb/MMcuFt Natural Gas)	3.3
PM 2	385 (MMcuFt/year)	15.2 (lb/MMcuFt Natural Gas)	2.9
Total NORPAC 1 & 2 CO Emissions (tons/year)			**307.6**

2. DETERMINATION OF BEST AVAILABLE CONTROL TECHNOLOGY

2.1 Definitions

Best Available Control Technology (BACT) is an emission limitation based on the most stringent level of emission control applied at similar sources that are technically and economically feasible.

In a BACT analysis, the applicant must rank all control options from highest level of control to the lowest. If the applicant can show that the highest level of control is technically or economically infeasible for the proposed source, then the next most stringent level of control is evaluated. Ultimately, the burden is on the applicant to prove why the most stringent level of control should not be used.

2.2 Regulatory Requirements

Federal and state laws require an applicant to use BACT for any pollutant that will have a significant emission increase at any major or minor source. An applicant is required by Washington State regulations to use BACT for any pollutant that will have a significant emission increase at the major source, if the emission unit was physically modified. This project does not result in a net significant emission increase for any pollutant regulated by PSD regulations. Therefore, there is no BACT review required.

3. AMBIENT AIR QUALITY ANALYSIS

3.1 Regulatory Requirements

PSD rules require an assessment of ambient air quality impacts from any facility emitting regulated pollutants in significant quantities. Limiting increases in ambient concentrations to the maximum allowable increments prevents significant deterioration of air quality. Since this Change in Conditions request results in very significant reductions in federally enforceable mass emission limits, there is no concern that ambient air quality will deteriorate.

3.2 Toxic Air Pollutants

PSD rules require the applicant to consider emissions of toxic air pollutants during the course of BACT analysis. One reason for this requirement is to ensure that the source does not employ an emission control technique that controls the main pollutant of concern but emits a new toxic air pollutant in serious quantities. The Change in Conditions will result in reductions in emission limits and emissions. There are no increases in TAPs that require New Source Review permitting.

4. AIR QUALITY RELATED VALUES

4.1 Impacts on Visibility

There was no visibility impact analysis performed for this Change in Conditions request.

4.2 Other Air Quality Related Issues

No analysis for other air quality related values (AQRVs) was undertaken.

4.3 Construction and Growth Impacts

The proposed Change in Conditions is not expected to cause adverse construction and growth-related impacts.

4.4 Impacts on Soils and Vegetation

The proposed Change in Conditions is not expected to cause or contribute to any violation of the NAAQS or AQRVs. As such, this project should not cause any impacts on soils and vegetation.

5. REVIEWS BY FEDERAL LANDS MANAGERS

The U.S. Forest Service and the National Park Service have not objected to issuance of the revised PSD permit, because the proposed Change in Conditions will not result in an increase in

pollutants that will affect Air Quality Related Values in any of the Class I areas managed by those agencies.

6. ENDANGERED SPECIES ACT

The Environmental Protection Agency has stated that no consultation is required under the Endangered Species Act or the Magnuson-Stevens Act.

7. PUBLIC INVOLVEMENT

The proposed Change in Conditions triggered public review and comment because NORPAC requested a relaxation of source testing requirements. A public notice was published in the Daily News newspaper on June 24, 2010. A copy of the draft PSD permit revision was also made available to the public through the local public library in Longview, Washington.

The public comment period closed on July 24, 2010. Ecology did not receive any comments from the public.

8. CONCLUSION

The project will have no significant adverse impact on air quality. The Washington State Department of Ecology finds that NORPAC has satisfied all requirements for approval of the PSD amendment application.

For additional information, please contact:

Mr. David Ogulei
Project Manager
Washington State Department of Ecology
Air Quality Program
P.O. Box 47600
Olympia, WA 98504-7600
(360) 407-6803
david.ogulei@ecy.wa.gov